IV. *Observations made of the* Latitude, Variation *of the* Magnetic Needle, *and* Weather, *by Capt.* Chriſtopher Middleton, *in a Voyage from* London *to* Hudſon's-Bay, Anno 1735.

Month.	Day.	Hour.	Altitude of the Thermometer.	Altitude of the Barometer.	Latitude by Account	Longitude from *London* by Account	Variat. of the Compaſs.	Latitude obſerv'd by *Smith*'s Quadr.	Latitude obſerv'd by *Hadley*'s Quadrant.	Latitude obſerv'd by *Elton*'s Quadra.	Latitude by Sextant of *Ward* & *Smith*.	Winds.	Remarks.
			°	° ′	° ′	° ′		° ′	° ′				
		6	27	29. 9			W.					S W	
May	31	12	24	29. 6	60. 0	19.11	23					to	Variable, with ſome Rain.
		9	29. 7	29. 7								S E	
		6	29. 7	29. 7								S E	Variable the firſt two Parts, moderate the latter, freſh Gales and a great Sea.
June	1	12	25	29. 5	59.50	23.33	24					to	
		9	25	29. 5								S W	
		6	26	29. 4								S W	
	2	12	26	29. 3	59.55	25.53	25	59.54	59.59			to	Cloudy, and ſqually with Rain.
		9	27	29. 8								S by E	
		6	28	29. 9									Frequent Showers of Rain,
	3	12	26	28. 8	60	28. 3	26	59.57	60			S W	with Squalls.
		9	27. 9	30. 1									
		6	29	30. 5									Uncertain ſqually Weather,
	4	12	26	29. 8	60.40	29.25	26	60.39	60.41			S W	with a Weſtern Swell.
		9	27. 9	30. 1									
		6	28	30									
	5	12	26	29. 8	60.31	32.12	27					S W	Squally, with ſome Rain.
		9	25	29. 7									
		6	28	29. 7								S W	
	6	12	25	29. 5	58.44	35.46	27	58.47	58.50			to	Variable, with Squalls of Rain.
		9	24	29. 5								N N W	
		6	28	29. 5								N N W	Variable freſh Gales, with Rain
	7	12	28	29. 9	58.11	36.58	28	58. 8	58.11			to	and Squalls.
		9	30	29. 8								W N W	
		6	30	29. 9								N N W	Moderate and fair Weather,
	8	12	28	29. 8	57.50	38.33	28	57.53	57.57			to	with Clouds.
		9	26	29. 6								W by S	

	6	26	29. 9								W b S	
June 9	12	25	28. 9	58.28	42.16	28	58.28	58.38			to	Rain and freſh Gales.
	9	26	29. 6								S b E	
	6	31	29. 8									
10	12	28	30	58.25	43.11	29	58.16	58.22			N W	Hard Gales, with a great Sea.
	9	26	30. 4									
	6	30	29. 8								N W	
11	12	27	29. 8	58.48	44.16	29	58.40	58.45			to	Moderate, with ſome Rain.
	9	28	29. 9								N E	
	6	30	30								N N E	At 6 made Cape *Farewell*, from
12	12	28	29. 6	58.22	45.46	29					to	NbW to NbE 14 or 15 Leagues
	9	28	29. 8								W b S	diſt. Moderate with ſome Rain.
	6	27	29									Much Ice in Sight. An hard
13	12	27	29. 7	58.12	45.37	29	58.10	58.13			N W	Gale, with a great Sea.
	9	32	29. 9									
	6	31	30. 1								N N W	Moſt part hard Gales.
14	12	26	29. 9	58.12	46.11	30	58.10	58.11			to	Under Main Sail and Mizen.
	9	29	30.23								E S E	
	6	29	30. 5								E S E	Saw a large Iſle of Ice. Pleaſant
15	12	29	30. 1	59. 7	49.49	31					to	Weather.
	9	27	30								S E	
	6	26	30. 1									Freſh Gales and cloudy, with
16	12	27	30. 1	60.14	55. 3	33					S E b S	ſome Rain.
	9	27	29. 9									
	6	30	31								S b E	
17	12	26	29. 9	61. 7	59.43	36					to	Moderate, but hazy, with Rain.
	9	26	29. 9								S E b S	
	6	31	29. 9									Hazy, with Rain and Fogs.
18	12	28	29. 5	61.23	63. 7	39					S E	Several Pieces of Ice.
	9	27	29. 7									
	6	27	29.85								S E	Foggy, with Calms. Much
19	12	31	30	61.47	63.16	39	61.44	61.49	61.54		S S W	Ice all round *Reſolution*.
	9	30	29. 9								S b E	

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			° ′	° ′	° ′	° ′		° ′	° ′	° ′	° ′		
		6	28	30. 1								W N W	Moderate Weather, moſt part Foggy.
June	20	12	29	30	61.40	64. 8	39			61.46		Wt	
		9	30	29. 8								S W b S	
		6	29	29. 8								W^{t}	Much Ice all round; fore Part Foggy, latter clear.
	21	12	29	30. 6	61	64.34	39	61. 4	61. 5	61.12		W N W	
		9	29	30. 8								N b W	
		6	32	29									
	22	12	27	29. 4	61.11	65.40	40		61	61.12	61.12	N b W	The moſt part foggy and hazy Weather.
		9	28	29. 9									
		6	30	29. 9								S^{o}	
	23	12	27	29. 8	61.30	66.50	40			61.30	61.30	S W	Fair, with much ſhatter'd Ice, and large Iſles.
		9											
		6											
	24	12	24	29. 8	61.37	67.19	41	61.36		61.38		W N W	Eaſy Breezes, fair and clear, heavy Ice all round.
		9	26	29. 6									
		6	28. 5	29. 9									
	25	12	27	29. 6	61.53	68.12	42					Ditto	Hazy middle Part, clear the latter.
		9	28	29. 8									
		6	28	29. 7									
	26	12	27	29. 8	61.41	68.42	41					S W b W	Fair pleaſant Weather; much Ice.
		9	30	39. 9									
		6										N N E	Little Winds, and fair pleaſant Weather.
	27	12	29	29. 7	61.30	68.42	41					W S W	
		9	29	29. 6									
		6	31	29. 8									
	28	12	29	29. 6	61.33	69. 2	40						Moſt Part foggy, with Calms.
		9	29	29.75									
		6	28	29. 5									
	29	12	27	29. 6	61.30	69.13	40	61.30		61.30	61.20	E S E	Several large Iſles of Ice; foggy.
		9	25	29.75									

	6	26	29. 9									ESE	Little Winds and calm; heavy
June 30	12	26. 5	29. 5	61.33	69.26	40						to	Ice all round.
	9	27	19. 9									WSW	
	6	29	29. 9										
July 1	12	27. 5	29. 7	61.28	70.10	41						ESE	Faſt in thick Ice, with Fogs and Rain.
	9	27. 5	29. 6										
	6	32	29. 1									SE	Theſe 24 Hours the firſt and latter Parts freſh Gales, middle a
2	12	31	29	61.28	70.37	41						to	Storm of Wind and Rain.
	9	26. 5	29. 3									NE	
	6	29. 5	29. 5										
3	12	28	29. 8	61.28	70.22	41						NW	Hard Gales, with much Snow.
	9	27. 5	29. 9										
	6	32	29. 9									NW	Moderate and fair Weather,
4	12	29. 5	29. 6	61.28	70.26	40							with much Ice.
	9	25. 5	29. 3									N b W	
	6	29	29. 8										Working to Windward in Ice,
5	12	27	29. 9	61.39	70.36	40	61.33		61.44	61.43		W b S	ſometimes in a Clear.
	9	29	29. 7										
	6	31	29. 9									WSW	Moſt Part fair and pleaſant
6	12	27. 5	29. 7	61.46	70.54	40		61.54		61.53		to	Weather, with much Ice.
	9	26	29. 7									NEbN	
	6	27	29. 4									NE	Foggy Weather, cloſe Ice all
7	12	27	29. 6	61.55	71.13	40						to	round.
	9	27	29. 9									NWbN	
	6	29	29. 7										
8	12	26	29.75	61.46	70.21	40						Ditto.	Moderate, with Fogs.
	9	25. 5	29. 9										
	6	29	29. 9										The firſt Part hazy, the latter
9	12	27	30	61.42	71.40	41			61.38			Ditto.	clear.
	9	27	30										
	6	32. 5	29. 7									NW	
10	12	29. 5	29. 6	62.18	75.13	41						to	Clear Sea, freſh Gales and hazy.
	9	26	29.75									SE	

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			° ′	° ′	° ′	° ′		° ′	° ′	° ′	° ′		
		6	31	29. 7									
July	11	12	27	29. 9	62.31	76	42					S b W	Foggy Weather.
		9	28	29.75									
		6	31. 5	29. 9									
	12	12	31. 5	29. 9	63. 5	75.28						Ditto.	Ditto.
		9	28	30									
		6	30	30. 2								S	Working in loose Ice; hazy, sometimes clear.
	13	12	29	30. 3	63.15	75				63.20		to N W	
		9	27. 5	29. 9									
		6	31	30								N W	Much Ice, fair and clear, with Calms.
	14	12	27	30	63.25	74.38						to West	
		9	25	30									
		6	30	29. 9								S S E	Much Ice, fresh Gales and hazy.
	15	12	27	29. 8	63.20	76						to E S E	
		9	27	29. 8									
		6	27	29. 8									Loose Ice, large Clears in Sight of *Salisbury*.
	16	12	26	29. 7	63.10	77.20						S E	
		9	26. 5	29. 7									
		6	27. 5	29. 7									
	17	12	27. 5	29. 6	63.10	78.20	44					E S E	Foggy, much Ice and fresh Gales.
		9	26	29. 7									
		6	29	29. 6									Loose Ice East End of *Nottingham*, N b E seven Leagues.
	18	12	26	29. 8	63	78	43					Calm.	
		9	26	29. 8									
		6	25	29. 9									Much Ice, clear Weather. Cape *Walsingham* S W b W five or six Leagues.
	19	12	24	29.85	63.10	78.20	43					E S E	
		9	27	29.80									
		6	28	29.85									Shatter'd Ice, foggy West; Island *Diggs*, W S W five Leagues.
	20	12	27. 5	29.84	63.20	78.30	41					S W	
		9	27	29. 9									

July

	6	27. 5	29.98								S S E	Cape *Diggs* S E b S 6 Leagues. Freſh Gales, and Ice.
July 21	12	25. 5	29. 9	63.10	79.50	42						
	9	24	29. 8								S b W	
	6	27	29. 9								SW bW to South.	Much large Ice; the North End of *Mansfield* S W b W four Miles.
22	12	25	29. 9	63	80.13	42						
	9	23. 5	30. 1									
	6	26. 5	30. 1									
23	12	26	30.	63. 4	81.10	44			62.52		S W	North End of *Mansfield* S W fourteen Miles.
	9	25	30									
	6	29. 5	29. 9								E b S	
24	12	29. 5	29. 9	61.34	82.52	40			61.26		to SSE	Hazy; ſome Pieces of Ice.
	9	26	29.85									
	6	31	29.82								S S W	
25	12	28	29.82	61.15	83.56	38			61.14	61.17		Much Ice, and Rain.
	9	26	29.83								S b E	
	6	32	29. 7								S b E	Thick foggy Weather, with Showers of Rain.
26	12	29	29. 7	60.45	84.23				60.41		to W b N	
	9	29. 5	29. 9									
	6	30. 5	29. 9								N W	
27	12	26	29. 9	59.39	84.11	30	59.36		59.34		to Weſt.	Steering Ice, with wet Fog.
	9	26	30. 1									
	6	28	30. 1									*Baker's Dozens* S b W four Leagues. Fair Weather.
28	12	26	30. 1	58. 9	82.44	28	58. 5	58. 2			N b W	
	9	26	30. 1									
	6	28	30									Moderate, with Fogs, Rain and Ice.
29	12	26	30	56.46	82.45	26			56.30		W b S	
	9	25	29.95									
	6	27. 5	29.85									Freſh Gales. A great Sea from the Southward.
30	12	25. 5	29. 9	55.51	82.39	25					NWbW	
	9	23	30									
	6	26	29. 9									Thunder and Rain. *North-Bear* S W by W five Miles.
31	12	25. 5	29. 5	54.44	82.47	24					N E	
	9	24	30									

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			° ′	° ′	° ′	° ′		° ′	° ′	° ′	° ′		
		6	26	30									
August	1	12	25. 5	29.98	53. 3	81.20	22					N E	Moderate and fair Weather.
		9	23	29.85									
		6	24	29. 8								South	The first Part moderate, the latter
	2	12	23. 5	29. 9	52.20	82						to	hard Gales, with Thunder and
		9	24	29. 9								North.	Lightning in with the W. Main.
		6											
	3	12	26	30	51.40	83							Arrived in *Moose-River* Road.
		9											
		6											
	4	12											
		9											
						West.						West	
Sept.	1	12	27	29.85	55.36	00.42	22					and	Moderate and fair.
		1										W b N	
		9	29	29.85		from						N W	Moderate Gales and Hazy, with
	2	12	27	30. 5	53.50	*Bear.*	26					to	small Rain.
		9	26	30. 8		1.16						North.	
		9	30	29. 8								N b W	
	3	12	26	30. 4	56. 6	1.16	26					to	Ditto.
		9	23	31. 5								N b E	
		9	30	29. 8								South	The first Part moderate, middle
	4	12	26	30. 6	58. 6	2.58	30					to	and latter very hard Gales,
		9	23	31								East.	with Squalls of Rain.
		9	33	29. 8									
	5	12	33	29.85	58.28	4.26	30					N E b E	Ditto, hard Gales and Squalls.
		9	34	30									
		9	33	30. 1								E N E	Fresh Gales and squally, with
	6	12	32. 5	30. 2	58.40	3.23	31	58.42	58.49			North.	a Head-Sea.
		9	32	30. 2									

Sept. 7	9	27	29. 9								NW	Ditto, Gales and Snow.
	12	27	29. 8	60.45	1.15	31						
	9	26	30. 1									
	9	37. 5	30. 3		East.						SW	Strong Gales and ſqually; great Sea from the North-Weſt.
8	12	35	30. 2	61.37	0. 4	32					to	
	9	32	30. 1								NW	
	9	34	30. 3		East.						NW	Moderate and fair; four Leagues from the SouthEnd of *Manſfields* 76 Fathom, Mud.
9	12	32. 5	30. 3	61.55	0. 4	33					to	
	9	32	30. 5								NNE	
	9	32	30. 5		Weſt.						NbE	Little Winds and fair Weather. In Sight of *Mansfields*.
10	12	29	30. 5	61.58	1. 0	34	61.43	61.45	61.46			
	9	30	30. 5								SW	
	9	36	30.25		East.							Fair and pleaſant Weather. In Sight of *Mansfields*, 4 Miles.
11	12	30	30. 1	62.30	2.21	43	61.30				SW	
	9	28	30									
	9	30	30. 1		East.						WSW	At Noon *Mansfields* NWbW 5 Leagues; Sleet and foggy. Cape *Walſingham* SW 6 Leagues.
12	12	30	30	62.52	2.28	42					to	
	9	30	30. 1								WNW	
	9	32	30. 3		fro. *Dige*						NW	Frequent Showers of Hail and Snow.
13	12	33	30.25	63. 9	3.40	43					to	
	9	32	30. 2		East.						NbE	
	9	31. 5	30. 1		East.						NNE	
14	12	29	30. 5	62.50	6.44	42						Moderate and fair Weather.
	9	31	30								Calm.	
	9	30. 5	29. 5								SW	Much Snow, with thick Weather.
15	12	30	29.46	62.22	7.55	42	62.21	62.23			to	
	9	29	29. 5								WNW	
	9	29	29. 8								NW	Paſs'd ſeveral large Iſles of Ice; freſh Gales and Sleet; thick Weather with Snow.
16	12	30	30	61.43	12	42					to	
	9	28	30. 3								NbE	
	9	32. 5	30. 4								North	First 2 Parts hard Gales and Snow, latter moderate. At Noon Cape *Reſolut.* NE 6 L. S. Pt. NWbN 4 L.
17	12	33	30. 5	61.43	15.10	40					to	
	9	31	30.55								NNE	

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			°	° ′	° ′	West. ° ′		° ′	° ′	° ′	° ′		
		9	31	30. 4								NEbN	Many large Isles of Ice; hard Gales; great Sea from the North-East.
Sept.	18	12	34	30. 3	60.40	58.40	40						
		9	31	30. 4								North to SW	Moderate, but dark and cloudy, with Sleet and Rain.
		9	33	29. 9									
	19	12	26	29. 5	59.49	53.45	38						
		9	26	29. 5								NW	Freſh Gales, with Rain and Snow.
		9	30	29. 7									
	20	12	29	29.65	58.42	48.52	32	58.37	58.38				
		9	29	29. 6								NNW to North.	Variable, with freſh Gales and Rain.
		9	31	29. 5									
	21	12	30	29. 6	57.28	44.31	29						
		9	29	27. 7								North to ESE	Freſh Gales and Squalls; variable Winds and cloudy.
		9	27. 5	29. 5									
	22	12	27. 5	29. 5	56.49	41.39	27						
		9	27	29. 6								NEbE to NbW	Hard Gales, with Rain and Fogs.
		9	29	29.65									
	23	12	26. 5	29. 5	55.52	36.50	25	55.44	55.47				
		9	26	29. 7								NNW	Freſh Gales, and Rain.
		9	31	29. 8									
	24	12	27	39. 9	55. 3	31.21	24	55. 1	55. 4				
		9	26	29. 8								NWbN to SWbW	Hard Gales, with Squalls and ſmall Rain.
		9	27. 5	30									
	25	12	26	30	53.43	25.59	23						
		9	26	30. 2								SW to SWbS	Firſt Part hard Gales, middle and latter moderate and hazy.
		9	21	30. 2									
	26	12	19	30. 2	52.38	22.23	22						
		9	20	30. 1								South to NNE	Freſh Gales, and much Rain; hazy Weather.
		9	21	30									
	27	12	20. 5	31	52.27	20.15	21						
		9	24	30. 1									

	9	25	30. 2								NE	Freſh Gales, and much Rain; hazy Weather.
Sept. 28	12	25	30.25	50.30	16.33	20	51	51				
	9	24	30. 2									
	9	23	30. 3								NE to N b W	Freſh Gales and hazy, with ſome Rain the firſt two Parts, the latter moderate.
29	12	23	30. 2	50.20	13. 7	19	50.24	50.25				
	9	24	30. 2									
	9	23	30. 2								NW to S by E	Moderate and fair; Winds variable.
30	12	21. 5	30. 3	50.37	11.41	18	50.30	50.35				
	9	20	30. 2									
	9	22. 5	30. 3								SSE	Moderate, with a great Head-Sea from the Eaſtward.
Octob. 1	12	22	30. 2	50.35	11.22	18						
	9	22	30. 3									
	9	22	30. 3								S E b S	Cloudy, with a great Sea from the Eaſtward.
2	12	23	30. 2	49.40	12.32	18						
	9	22	30									
	9	22	29								SSE to S b E	Hard Storm of Wind, with a great Sea.
3	12	22. 5	29	50. 7	11.39	18						
	9	22. 5	30. 1									
	9	20	29. 9								SSW	Moderate Gales, with ſmall Rain.
4	12	20	30. 1	50. 3	10.36	17	50. 4					
	9	20	30.25									
	9	20. 5	30.35								SSW to Weſt.	Ditto, fair and moderate.
5	12	20. 5	30. 3	49.38	8.52	16	49.42					
	9	20. 5	30. 4									
	9	22	30. 2								South Calm SSE	Saw ſeveral Ships, ſounded 100 Fathom. Moderate.
6	12	22	30. 1	50	7.20	15	50. 5					
	9	22	29. 9									
	9	22	29. 9								SSE	Two firſt Parts hard Gales and heavy Squalls, the latter moderate.
7	12	21	30	49.39	6.58	15	49.38					
	9	21	29. 9								WNW	

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An Explanation of the TABLES.

The firſt Column contains the Month; the ſecond Column is the Day of the Month; the third the Hour of the Day, beginning at Six in the Morning, to Twelve at Noon, and Nine at Night; the fourth Column is that of the Thermoſcope; the fifth Column is the Height of the Mercury in the Baroſcope, the firſt Number is the Inches of its Height, the ſecond and third Number marks the tenths and hundredth Parts of an Inch; the ſixth Column is the Latitude the Ship is in, by Account, every Day at Noon; the ſeventh Column is the Longitude the Ship is in every Day at Noon, by Account, from the Meridian of *London* (except where otherwiſe expreſs'd). The Column Variation, is the Variation of the Needle; and the next four Columns are the Latitudes obſerv'd at Noon by four ſeveral new Inſtruments; the firſt is Mr. *Smith*'s Priſmatic Quadrant, the ſecond is Mr. *Hadley*'s, the third by Mr. *John Elton*, and the fourth by Mr. *Caleb Smith* and Mr. *William Ward*; the next Column is the Wind for the moſt Part of the Twenty-four Hours.

The Thermoſcope which I made uſe of in the Voyage, was made by Mr. *John Patrick*, together with the Baroſcope; in his Thermoſcope he places [°] at the Top, ſuppoſing it to be the Heat under the Line, and ſo the Figures increaſe downwards, with the Increaſe of Cold. Temperate is placed at 25.

This Priſmatic Quadrant of Mr. *Caleb Smith* I find to be of very great Uſe at Sea, in particular for the Stars, as I have experienced ſeveral times in my Voyage to *Hudſon*'s *Bay*, in the worſt of Weather, when you can but ſee the Horizon; and his other is of great Uſe, in tolerable ſmooth Water, in foggy and hazy Weather, when there is no Horizon to be ſeen, yet have the Benefit of the Sun.